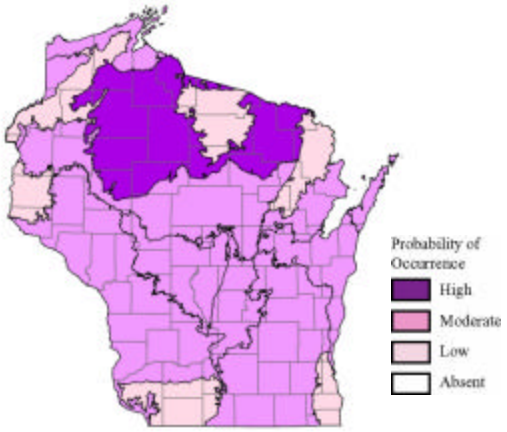
Silver-haired Bat (*Lasionycteris noctivagans*)

Species Assessment Scores*

State rarity:	2
State threats:	4
State population trend:	3
Global abundance:	4
Global distribution:	3
Global threats:	3
Global population trend:	3
Mean Risk Score:	3.1
Area of importance:	2

* Please see the Description of Vertebrate Species Summaries (Section 3.1.1) for definitions of criteria and scores.



Ecological Landscape Associations
Please note that this is not a range map. Shading does not imply that the species is present throughout the Landscape, but represents the probability that the species occurs somewhere in the Landscape.

Landscape-community Combinations of Highest Ecological Priority

Ecological Landscape	Community
Central Sand Hills	Coldwater streams
Forest Transition	Coldwater streams
Forest Transition	Coolwater streams
North Central Forest	Alder thicket
North Central Forest	Coldwater streams
North Central Forest	Coolwater streams
North Central Forest	Emergent marsh
North Central Forest	Ephemeral pond
North Central Forest	Hardwood swamp
North Central Forest	Inland lakes
North Central Forest	Northern mesic forest
North Central Forest	Northern sedge meadow
North Central Forest	Northern wet forest
North Central Forest	Northern wet-mesic forest
North Central Forest	Open bog
North Central Forest	Submergent marsh
North Central Forest	Warmwater rivers
North Central Forest	Warmwater streams
Superior Coastal Plain	Coldwater streams
Superior Coastal Plain	Coolwater streams
Western Coulee and Ridges	Coldwater streams
Western Coulee and Ridges	Coolwater streams

Threats and Issues

- Wind farms are a recent addition to the landscape in many parts of the United States. Bat fatality at wind turbines has been documented in all regions and in varying habitat conditions across North America. Annual mortality varies, but is conservatively estimated to vary from <2 to nearly 50 bats/turbine/year. Silver-haired bats are one of the species killed most frequently. Current evidence suggests that bat mortality appears to be highest in or near forests, especially along ridge tops,

moderate in open areas close to forest in the Midwest, and lowest in open grassland or farmland away from forests. Because bats are long-lived, have low reproductive rates, and appear to be especially vulnerable to wind turbines, solutions are needed to prevent or minimize this new threat, whose cumulative impacts on populations of bats could be significant.

- Removal of nursery trees and loss of foraging habitat damages local breeding populations.
- Silver-haired bats eat a variety of arthropods. They consume flies, midges, leafhopers, moths, mosquitoes, beetles, true bugs, and ants. Although silver-haired bat diets vary widely in types of insects eaten, they seem to select mostly small, soft-bodied species, especially those that swarm in groups (Bat Conservation International 2001). As arthropod diversity correlates with plant species diversity, this dietary variability would suggest the need for a diverse forest flora. Non-native plant establishment tends to reduce native plant diversity and could thus negatively impact the prey base for the silver-haired bat.
- Insecticide use in agricultural and forested landscapes may threaten bats through direct contact and indirectly through the reduction of target and non-target prey species. Insecticides are frequently sprayed during bat foraging periods, especially in the early morning, evening, or night, in order to target mosquitoes, avoid killing honeybees, and take advantage of quiet wind conditions. When directly exposed, bats may absorb chemicals through their lungs and skin, or by ingesting contaminated insects or polluted water (Clark 1981). Several studies link mortality of both juvenile and adult bats to organochlorine insecticides such as heptachlor, and dieldrin, which is linked to DDT (no longer used but still persisting in ecosystems) and its metabolites, DDD and DDE. Organochlorine insecticides are believed to kill mostly young bats when the chemicals, concentrated in the fat of the mother's milk, are passed to the pups or when flight begins and fat reserves from lactation are burned. Adult bats are most likely to be affected by fat-soluble toxins released when fat reserves are consumed during migration or hibernation (Clark 1981, 1988b, Clark *et al*. 1978a, 1978b).

Priority Conservation Actions

- Protection of foraging habitat and of summer roosting areas associated with mature or old-growth forests having a diverse age structure and high densities of large snags is needed for conservation of this species. Limited research from western forests suggests that silver-haired bats prefer roosts higher than 10 m above the ground in large diameter snags. Thus land management that focuses on recruitment and retention of snags and the maintenance of structural complexity in upland as well as riparian areas is important for conservation of this species (Campbell *et al*. 1996).
- Legislation is needed that increases protection of bats during all phases of their life history, i.e., migration, foraging, nursery sites, and summer roost sites.
- Research is needed on most aspects of life history, including roosting, and foraging habitat requirements, population dynamics, population trends, and migration and dispersal patterns. An assessment of the habitats needed to support all life history stages and activities is needed before adequate stewardship programs can be devised.
- Inventories should be conducted in advance of large-scale habitat modifications that would result in the loss of older forest or removal of standing dead trees within areas known or suspected to contain this species.
- Outreach is needed to educate the public on bat biology and ecology, to reduce unfounded fears and myths, and to provide training for citizens to assist in monitoring efforts.
- A statewide bat management plan is needed to outline a coordinated and comprehensive approach to bat conservation in Wisconsin, and should include identification of and roles for conservation partners.